22

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,498	10/16/2003	Kazunori Ban	392.1824	5372

21171 7590 10/10/2007
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EXAMINER	
ROSARIO, DENNIS	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
10/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/685,498	**Applicant(s)** BAN ET AL.	
	Examiner Dennis Rosario	**Art Unit** 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *5/15/07 8/17/07*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment was received on 8/17/07. Claims 1-20 are pending.

Response to Arguments

2. Applicant's arguments on page 9 filed 8/17/07 have been fully considered but they are not persuasive and states:

"Suyama does not discuss...independent claim 1"

The examiner respectfully disagrees as represented by the rejection of claim 1, below.

3. Applicant's arguments on page 12, lines 13,14 have been fully considered but they are not persuasive and states:

"Suyama does not distinguish between an objective workpiece and a reference workpiece..."

The examiner respectfully disagrees since fig. 6A, num. 9' is the reference work piece that corresponds to marks M1-M4 in fig. 6B and the objective workpiece is fig. 6A, num. 9 represented in fig. 6B as marks S1-S4 where M1-M4 serve as a reference or ideal position for alignment purposes.

4. Applicant's arguments on page 12, lines 13-15 have been fully considered but they are not persuasive and states:

> **"Suyama does not...discuss storing reference information on first and second regions which is obtained from a two-dimensional image of a reference workpiece."**

The examiner respectfully disagrees since Suyama discloses storing (via latches in fig. 5, numerals 59 and 62) reference information (upon the output of fig. 5,num. 55 that is a function of a reference signal as shown in fig. 5,num. 34) on first (fig. 6B:M1) and second regions (fig. 6B:S1) which is obtained from a two-dimensional image (fig. 2, num. 7 shows an image of marks M1-M4) of a reference workpiece (where said marks represent a reference workpiece as shown in fig. 6A as num. 9').

5. In response to applicant's argument on page 12, lines 15-17 that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "...distinguish...the surface...") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. In response to applicant's argument on page 12, lines 27,28 that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "measuring for an objective workpiece and measuring for a

reference workpiece...") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

7. Applicant's arguments on page 12, last sentence have been fully considered but they are not persuasive and states:

> **"...S1 is not a...region..."**

The examiner respectfully disagrees since the claimed "region" is broad enough to encompass a spot or point that is represented by S1.

8. Applicant's arguments on page 14, lines 3-8 have been fully considered but they are not persuasive and states:

> **"...Suyama does not discuss determining a region corresponding to the second region based on information on a position and an orientation of the region determined as corresponding to the first region and the reference information stored in the storage means..."**

The examiner respectfully disagrees since Suyama does discuss determining (via fig. 5,num. 7 or "robot controller" in col. 7, line 51) a region (said M1) corresponding (or corresponding to "coincide" in col. 7, line 43) to the second region (said S1) based on information on a position (from fig. 5,numerals 59 and 62) and an orientation (as shown in fig. 7A,num. 9' that is in a horizontal orientation relative to fig. 7A,num. 9) of the region (said M1) determined as corresponding to the first region and the reference information (M1-M4) stored in the storage means (said numerals 59 and 62).

9. Applicant's arguments on page 14, lines 12-14 have been fully considered but they are not persuasive and states:

> **"...Suyama does not discuss or suggest determining a region corresponding to the second region based on information on a position and a size of the region determined as corresponding to the first region and the reference information stored in the storage means."**

The examiner respectfully disagrees since Suyama does discuss determining a region (said M1 via said fig. 5,num. 7 or controller) corresponding (or "coincide" in col. 7, line 43) to the second region (said S1) based on information (the output of fig. 5,num. 55) on a position (from fig. 5,num. 59) and a size (or "Small indentations" in col. 8, line 10) in of the region determined as corresponding to the first region (said M1) and the reference information (M1-M4) stored in the storage means (or latches in fig. 5).

10. Applicant's arguments on page 14, lines 15-18 have been fully considered but they are not persuasive and states:

> **"...Suyama does not discuss...determing a region corresponding to the second region based on information on a position, an orientation and a size..."**

The examiner respectfully disagrees for the same reasons as paragraphs 8 and 9, above.

11. In response to page 15, lines **"It is unclear how scribed line K corresponds with a range of bright spot."**

The examiner concluded that K encompasses S1 as shown in fig. 2 where S1 is used to obtain a depth or distance or the claimed range between workpiece 9 and head 3 as shown in figures 1 and 2.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Suyama et al. (US Patent 4,879,664 A1).

Regarding claim 1, Suyama discloses a three-dimensional visual sensor for obtaining three-dimensional information on an objective workpiece based on an image of the objective workpiece captured by projecting a reference beam onto the objective workpiece, comprising:

a) means for storing (fig. 5,numerals 51, 59 and 62 and see paragraph 4, above),:

a1) as reference information (fig. 5,num. 34 is reference information corresponds to marks M1-M4 as shown in fig. 2 that is stored via said 59 and 62),

a2) information (or positions) on a first region (corresponding to fig. 2: M1 since M1 is reference information) including:

a3) a characteristic part of the objective workpiece (fig. 6A:P0) and

a4) a second region (fig. 6A, num. S1 and see paragraph 7, above) as a target region (since S1 is ultimately aligned with M1 in fig. 6B) of three-dimensional measurement (since fig. 5 corresponds to a “three-dimensional position sensor” in col. 4, line 2) of the objective workpiece,

b) said information (or said positions) on the first (said M1) and second regions (said S1) being obtained (via fig. 5, numerals 59 and 62) from a two-dimensional image (fig. 6B or fig. 5, numerals 51 and 34) of a reference workpiece (fig. 6A, num. 9') of the same type (as seen when comparing fig. 6A, numerals 9 and 9') as the objective workpiece (fig. 6A, num. 9), which is captured from a predetermined position (as shown in fig. 6A, num. 9);

c) means for capturing an image (fig. 6A, num. 3) of the objective workpiece and determining a region (of crosshairs of M1 that are in contact with corresponding point S1) corresponding to said first region (said M1) in the image of the objective workpiece;

e) means for determining (via fig. 5,num. 7 or "robot controller" in col. 7, line 51) a region (said M1) corresponding to said second region (said S1) based on information on a position of the region (as shown in fig. 6B relative to M1) determined as corresponding to:

e1) said first region (said M1 is a position of a region) and

e2) said reference information (said M1-M4 are positions of regions) stored in said storage means; and

f) means for obtaining three-dimensional information (via fig. 5) on the objective workpiece (fig. 4,num, 9) in the region (said M1) determined (via said fig. 5,num. 7) as corresponding (or "coincide" in col. 7, line 43) to said second region (said S1) of an image (fig. 6B) of the objective workpiece (wherein fig. 6b represents two workpieces S1-S4 represent fig. 2,num. 9 and M1-M4 represent fig. 6A,num. 9') captured (via fig. 4,num. 35) by projecting said reference beam (shown in fig. 4 as multiple arrows pointed towards 9) onto the objective workpiece.

Regarding claim 2, Suyama discloses a three-dimensional visual sensor according to claim 1, wherein said reference information includes:

a) information on a position of said first region (as indicated by P0 of fig. 6B) and

b) a position (as indicated by S1 in fig. 6B) and a range (represented as "K" in fig. 6B and see paragraph 11,above) of said second region.

Regarding claim 3, Suyama discloses a three-dimensional visual sensor according to claim 1, wherein said reference information includes:

a) information on a positional relation (via angle "θ" in fig. 22B between said first (fig. 8B,num. P0) and second regions (fig. 6B, num. S1) and

b) a range (as indicated in fig. 6B as "K") of said second region (fig. 6B, num. S1).

Regarding claim 4, Suyama discloses a three-dimensional visual sensor according claim 1, wherein the two-dimensional image from which the information on said first region is obtained is:

a) a two-dimensional image (represented as fig. 9A) captured without projecting the reference beam (or "without bright spots" in col. 6, line 61 where said spots are interpreted as being able to be formed with said reference beam), and

the two-dimensional image from which the information on said second region is obtained is:

b) a two-dimensional image (represented in fig. 9B) captured by projecting the reference beam (or "with bright spots" in col. 6, line 63).

Regarding claim 5, Suyama discloses a three-dimensional visual sensor according to claim 1, wherein the two-dimensional image from which the information on said first and second regions is obtained is:

a) a two-dimensional image (as shown in fig. 6B) captured by projecting the reference beam (as indicated by "K" in fig. 6B).

Claim 6 is rejected the same as claim 1. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 6 and see paragraph 8, above.

Regarding claim 7, Suyama discloses a three-dimensional visual sensor according to claim 6, wherein said reference information includes:

a) information on a position and an orientation of said first region (as shown in fig. 22B as an x-y axis and angle θ corresponding to P0) and

b) a position (as indicated by the x-y axis of fig. 22B) and a range (as shown in fig/ 22B as x1) of said second region (fig. 22B, num. S1).

Claim 8 is rejected the same as claims 3 and 7. Thus, argument similar to that presented above for claims 3 and 7 is equally applicable to claim 8.

Claim 9 is rejected the same as claim 4. Thus, argument similar to that presented above for claim 4 is equally applicable to claim 9.

Claim 10 is rejected the same as claim 5. Thus, argument similar to that presented above for claim 5 is equally applicable to claim 10.

Claim 11 is rejected the same as claim 1. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 11 except for the additional limitation of position and size as disclosed in Suyama in fig. 22B as and x-y axis in fig. 22B corresponding to the claimed position and "X1" in fig. 22B corresponding to the claimed size and see paragraph 9, above.

Claims 12-15 are rejected the same as claims 2-5. Thus, argument similar to that presented above for claims 2-5 is equally applicable to claims 12-15, respectively.

Claim 16 is rejected the same as claim 11. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 11 except for the additional limitation of orientation as disclosed in Suyama in fig. 22B as angle "θ" in fig. 22B and see paragraph 10, above.

Claims 17-20 are rejected the same as claims 2-5. Thus, argument similar to that presented above for claims 2-5 is equally applicable to claims 17-20,respectively.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hooker et al. (US Patent 5,644,141) is pertinent as teaching a method of a “reference object (abstract)” for comparing to a “test object (abstract)” to obtain a three-dimensional contour.

Kitoh et al. (US Patent 5,396,331) is pertinent as teaching a method of using a workpiece with reference points to obtain 3-dimensional data.

Mimura et al. (US Patent 5,305,092) is pertinent as teaching a method of using a reference signal with an object signal as shown in fig. 9 to obtain volume data as show in fig. 15,num. 6.

Anezaki et al. (US Patent 5,198,876) is pertinent as teaching a method of using a ”reference workpiece” in col. 2, line 27 to obtain 3-dimensional data.

Uesugi et al. (US Patent 5,102,223) is pertinent as teaching a method of using a reference memory and object memory and three-dimensional memory (fig. 5,numerals 14 and 13 and 17).

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario whose telephone number is (571) 272-7397. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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